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Published in:
Population Studies: A Journal of Demography

DOI:
[10.1080/00324728.2020.1784986](https://doi.org/10.1080/00324728.2020.1784986)

Publication date:
2021

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
van Dalen, H., & Henkens, C. J. I. M. (2021). When is fertility too low or too high? Population policy preferences of demographers around the world. *Population Studies: A Journal of Demography*, 75(2), 289-303.
<https://doi.org/10.1080/00324728.2020.1784986>

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To cite this article: Hendrik P. van Dalen & Kène Henkens (2021) When is fertility too low or too high? Population policy preferences of demographers around the world, *Population Studies*, 75:2, 289-303, DOI: [10.1080/00324728.2020.1784986](https://doi.org/10.1080/00324728.2020.1784986)

To link to this article: <https://doi.org/10.1080/00324728.2020.1784986>



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Published online: 22 Jul 2020.



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When is fertility too low or too high? Population policy preferences of demographers around the world

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When does fertility in a country become so low or so high that a government needs to intervene? This paper sheds light on this population policy question, based on a worldwide survey among demographers. We examine how professionals' policy preferences regarding fertility levels are affected by their views on the impacts of population growth/decline and by fertility in their country of residence. The median respondent suggests intervention once fertility goes below 1.4 children or above 3.0. Three results stand out: first, demographers who are concerned about the carrying capacity of the earth are more willing to intervene than those who are less concerned. Second, the context of decision-making matters: experts living in high-fertility countries are more set on intervention than those living in low-fertility countries, but their threshold fertility level is also higher. Third, political orientation matters: right-leaning demographers are more set on government intervention than left-leaning demographers.

Keywords: fertility; demographers; replacement rate; population decline; family planning; population policy

[Submitted October 2019; Final version accepted May 2020]

Introduction

Population and fertility developments divide governments worldwide. In the least developed parts of the world, most governments express a willingness to decrease total fertility (De Silva and Tenreyro 2017; UN 2017). The mirror image of this policy stance can be found in the developed world, where below-replacement fertility causes concern for governments, as populations might decline and age. Some governments have developed policies aimed at increasing fertility, whereas other governments abstain from such interventions. This divide in the sense of urgency has not always existed in policy circles. During the 1960s and 1970s, only a minority of governments in the developing world were set on achieving lower fertility. Concern about population growth was widespread in academic circles and the media in western societies in the 1960s and 1970s (Lam 2011). Population decline was not a widespread phenomenon at that time, nor was it a prominent issue among governments. The latest United Nations (UN) report on population policies around the world gives a very different picture:

currently almost 90 per cent of the least developed countries are aiming to lower fertility and the majority of developed countries are set on increasing fertility. Assessments of whether the level of fertility is too high or too low seem to vary across time and place. Judging from debates in national (Teitelbaum and Winter 1985; Kohler et al. 2002) and international forums, such as the International Conference on Population and Development (ICPD) and follow-up population conferences (Van Dalen and Scharf 2014; May 2017), the opinions of governments seem to be based on a mix of ideological factors and a sense of urgency shared by politicians and citizens about the negative consequences of population growth or decline for their own country. Media attention to low fertility (cf. Stark and Kohler 2002) suggests that despite there being positive sides to low fertility, it is generally seen as a phenomenon with negative consequences, and corrective government action to move in the direction of replacement fertility is called for. From various sides within demography, the replacement fertility level is viewed as having limited relevance to policy practice. Lutz (2014), for instance, has made a strong case that

replacement fertility is not a good guide for today's population policy and that population policy cannot be discussed in purely demographic terms. He stated that there can be 'economic reasons why long-term fertility levels somewhat below replacement would be preferable to replacement level' (Lutz 2014, p. 528). Lee and Mason (2014) and Lee (2016) have approached the problem of transfers within populations from a macroeconomic point of view and come to similar conclusions.

The divergence in population policy stances across the world may be of particular concern now that the issue of climate change has gained prominence, and global concerns should ideally be part of population policy debates in both developed and less developed countries. However, as insiders within demography have noted (Bongaarts and Sinding 2009; Bongaarts and O'Neill 2018), support for population policy, and family planning in particular, is viewed with scepticism and is associated with issues of 'coercion' and unethical policy practices (Sen 1997). This may have been an accurate description of distant times when neo-Malthusian proponents and organizations tried to stem high fertility. However, ever since the ICPD at Cairo in 1994, coercive and unethical population policies have been explicitly condemned. The subsequent *Programme of Action* (UNFPA 1994) recommended that population policies should focus on human rights, sexual equality, and reproductive health. In line with this focus, it was stressed that reproductive health programmes, including family planning, should be completely voluntary.

In this paper we examine the population policy preferences of demographers with respect to total fertility in their country of residence. We focus on two research questions: (1) Should governments intervene in matters of low fertility or high fertility, and if so, at what fertility levels is government intervention deemed appropriate? and (2) To what extent are these demographers' policy preferences influenced by their country's demographic context (a high- or low-fertility setting), their assessments of the consequences of population growth or decline, and their political orientation? At this point we want to stress that in this paper the term 'government intervention' is understood to be a government policy that adheres to the principle of voluntariness, and should be interpreted as, for example, providing information or facilitating choices by changing incentives (parental leave, childcare support, or access to contraception), as perceived to be the case in today's practice of family planning (Robinson and Ross 2007; Bongaarts and Sinding 2009; Bailey

2013). Disentangling the drivers of population policy preferences helps us to understand why expert opinions may differ and why: for example, debates about population policies can generate tensions as a result of participants coming from different regions of the world, or for reasons related to individual concerns about population developments and political orientation.

We examine these preferences by using a unique worldwide data set on the views of demographers from 93 different countries (see Van Dalen and Henkens 2012). Opinions of population experts are important because these experts inform policy-makers and are likely to be more informed than politicians, with a long-term perspective on population developments. By examining the policy preferences of experts around the globe, not only can we profit from this knowledge diversity and see what unites experts, but we can indirectly gain a better understanding of the diversity in fertility-related population policies and why in some places population policy is welcomed whereas in other places it is viewed with scepticism or hostility.

Four important insights are presented. First of all, there is a wide interval of non-intervention in matters of fertility when we look at the median respondent: fertility levels between 1.4 and 3.0 may raise concern, but do not convince demographers that government intervention is necessary. Second, concerns about the carrying capacity of the earth, as well as concerns about population decline (only in low-fertility settings), have an impact on the threshold level of fertility at which government intervention is deemed necessary. Third, the political orientation of experts is important in deciding on the principal issue of whether governments should intervene in matters of fertility at all. Experts who place themselves on the right of the political spectrum are more set on intervention in matters of fertility than left-wing experts. And finally, the fourth finding concerns the importance of context in decision-making: experts living in high-fertility countries are more set on government intervention than those living in low-fertility countries, but among those who favour policy intervention, the threshold fertility level is also higher.

The set-up of this paper is as follows. We first set out the dilemmas of population policies in different fertility settings, and subsequently present the data set, models and methods used to explore the question in more depth. This is followed by a section reporting on our results, and we conclude with a discussion.

Perspectives on population policy

Population policies in both developed and less developed countries are becoming more visible among government policies, as registered by the UN (see Figure 1). Over the period 1976–2015 we can see a clear increase in the percentage of more developed countries that wanted to *increase* fertility; in 2015 a clear majority (63 per cent) of the countries wanted to raise fertility. In less developed countries a strong interest in *decreasing* fertility exists, although from 1996 onwards this interest has stabilized. This does not apply to countries in the ‘least developed’ group, where virtually all governments are currently set on lowering fertility.

This change in the population policies of national governments is to some extent understandable if we consult the fertility development over time shown in Figure 2. This figure shows how the cumulative distribution of total fertility rates (TFRs) across all the countries in the world has changed between the early 1950s and the most recent past. In the 1950s the TFR of the median country was 6.00 children, whereas by the period 2010–15 the TFR for the median country had dropped to 2.35.

In the 1950s below-replacement fertility was virtually non-existent, whereas for the period 2010–15 the TFR was below 2.1 children in approximately

40 per cent of the countries, and governments of such countries might be concerned about the prospect of population decline. The TFR was higher than three children per woman in approximately one-third of the countries, and experts living in those countries might still share the concerns of high fertility.

High-fertility settings

A fundamental question that must be considered by governments is whether and when they should intervene in matters of fertility. Over time these questions have been given different answers. Above-replacement fertility and high population growth were conditions that most developed countries shared with less developed nations after the Second World War. Demographers who obtained their education during the 1960s and 1970s could not escape the presence of neo-Malthusian publications, such as *The Population Bomb* (Ehrlich 1968), *The Limits to Growth* (Meadows et al. 1972), and ‘The tragedy of the commons’ (Hardin 1968). Overpopulation was then a national and international concern, and this stance was at that time complemented by quite strong policy statements. The ecologist Hardin stated that ‘No technical solution can rescue us from the misery

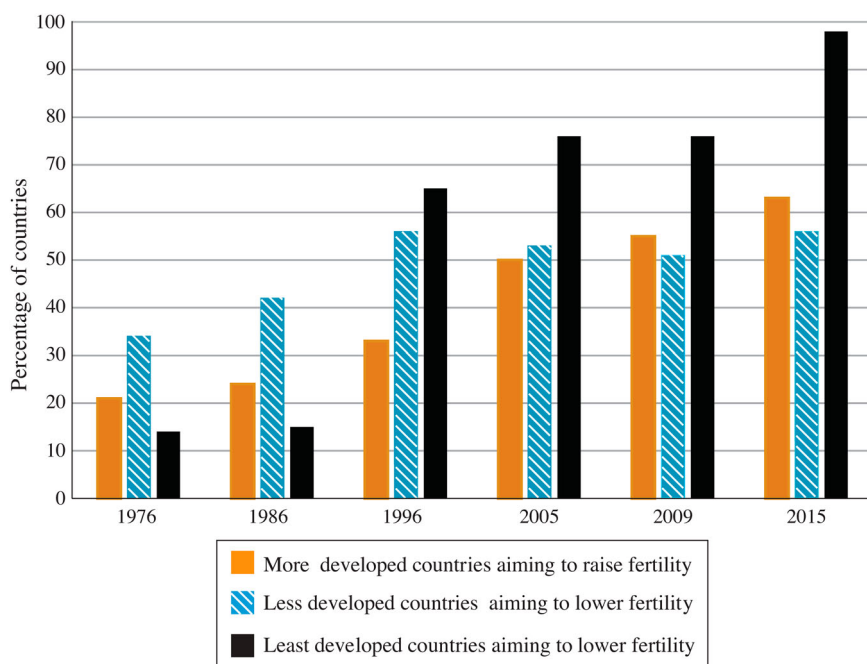


Figure 1 Government population policies with respect to fertility in different regions of the world, selected years 1976–2015

Source: UN, World Population Policies database, https://esa.un.org/PopPolicy/about_database.aspx.

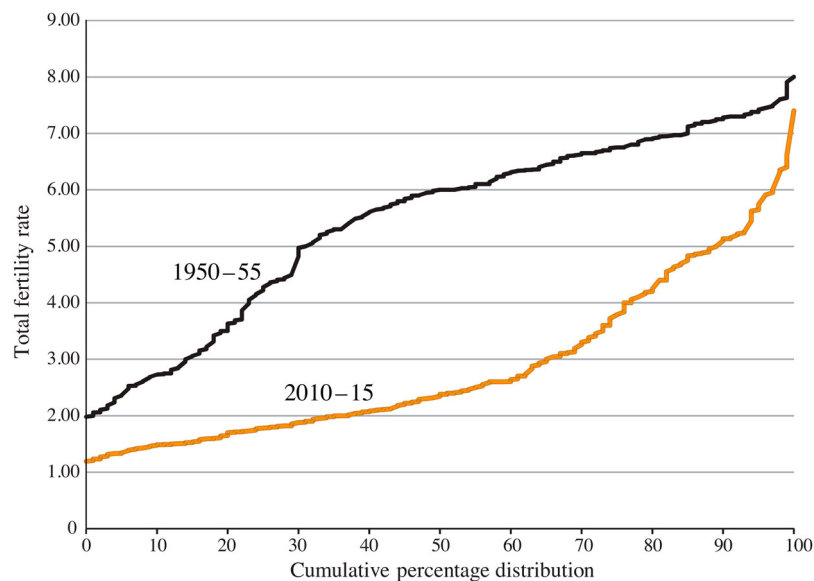


Figure 2 TFR distribution for all countries in the world as registered by the UN, 1950–55 and 2010–15
 Source: UN (2017), $N = 200$ countries.

of overpopulation. Freedom to breed will bring ruin to all' (p. 1248). And his colleague Ehrlich was equally strong in displaying his views. He embraced the pessimistic Malthusian outlook and predicted that population growth would lead to massive famines, poverty, deaths, and perhaps a thermo-nuclear war. And when it came to population policy: 'We must have population control at home, hopefully through a system of incentives and penalties, but by compulsion if voluntary methods fail' (Ehrlich 1968, p. 1).

By today's standards, these answers appear outdated, and certainly the Cairo conference of 1994 has helped to promote the modern focus on reproductive rights and sexual equality. The ICPD's *Programme of Action* (UNFPA 1994) stressed that in advancing human well-being, governments should place the human rights of individuals, rather than numerical population targets, at the centre of the global development agenda. Although the question of whether population policies should be voluntary has seemed like a settled issue for demographers since the Cairo conference, family planning can still be associated with coercive or unethical state intervention: a state of affairs that, according to Bongaarts and Sinding (2009), is not supported by facts. They have claimed that despite exceptions such as China, the perception that 'family planning programs throughout the developing world still place undue pressure on families, in particular women, to conform to reproductive norms imposed by governments [...] is no longer supported by the evidence' (p. 42).

Low-fertility settings

The setting of low fertility may be perceived as the mirror image of a high-fertility setting, but that would be an over-optimistic view, as low fertility seems to have its own dynamic on which demographers have reported over time. The long-term decline in fertility is usually depicted as an integral part of the demographic transition. The naïve perspective to take in thinking about the future is to assume that replacement fertility is some stable equilibrium to which all populations converge. However, the appearance of countries with very low fertility has raised concern among policymakers and demographers that spontaneous corrections will not occur. As Demeny (2015) has summarized: 'Hoping for a self-correcting spontaneous behavioural change is not completely irrational—birth rates that have fallen may also rise—but the benevolent working of an Adam Smithian invisible hand, nudging very low fertility rates back to replacement level is poorly supported by contemporary evidence' (p. S80). Of course, the problem demographers face in making judgements about fertility developments is that they have to deal with the uncertainty surrounding fertility as reflected in period TFRs. Fluctuations in period fertility are driven by both 'tempo effects' (transitory changes in fertility timing) and 'quantum effects' (changes in the total number of children women have). Cohort fertility is the preferred measure to look at, but, of course, this measure can only be captured once an entire cohort has completed its child-bearing (usually taken to be by the age of 45).

Hence it takes some expert judgement to look through the veil of aggregate fertility statistics to see when a country is truly becoming a low-fertility country. Myrskylä et al. (2013) have shown by the use of a new method of constructing cohort fertility rates that by and large, for most countries, the cohort rate is higher than the period rate, suggesting that earlier pessimistic views about a fertility ‘crisis’ or ‘trap’ (Lutz et al. 2006) were based on giving too much weight to period TFRs. The uncertainty in making judgements on fertility is also increased by the presence of economic crises, which are likely to depress fertility (Goldstein et al. 2013; Schneider 2015), via structural developments in the labour market, such as the shift to more short-term contracts (Billari 2018; Seltzer 2019) and by issues related to sexual equity within households and society (McDonald 2013; Anderson and Kohler 2015). It may perhaps be summed up by the down-to-earth judgement of Morgan (2003), who considers the state of societies that display low fertility on a decadal time scale: ‘For such countries, there is likely to be much more wrong than low fertility’ (p. 600). And very low fertility—even if this state is clouded by considerable uncertainty—is expected to generate tensions in developed countries. In the absence of migration, countries face the prospect of population decline and, according to some, this fate is associated with falling national identity (Teitelbaum and Winter 1998) or falling long-run economic growth prospects (Bloom et al. 2010). In response to these developments, pleas for pronatalist policies have become more visible over time (UN 2017). Although fear of population decline and its consequences is widespread among policymakers, demographers try to provide the bigger picture and stress that a smaller population size also ‘has social, economic and environmental advantages’ (Coleman and Rowthorn 2011). Overall, this short overview suggests that demographers may have some opinion on a threshold level of fertility at which governments should start becoming concerned about a state of very low fertility. Given the uncertainty in assessing fertility rates, we can also expect the range of opinions to be large.

Hypotheses

In understanding the population policy preferences of demographers for high- and low-fertility settings, we focus in our analysis on three separate hypotheses.

Our first hypothesis is that the choice of threshold is based on an individual assessment of the societal

consequences of population growth or decline. The perceived pros and cons of population growth or decline are expected to be a major driver of preferences for government intervention. Two possible consequences of population growth or decline are deemed particularly important and hence used in this paper: the assessment of the adverse economic consequences of population decline for a country and the assessment of adverse consequences of population growth on the carrying capacity of the earth.

Second, policy preferences may be affected by the demographic context of the respondent’s country of residence. We know from the work in psychology by Kahneman and by Tversky (Kahneman and Tversky 1984; Tversky and Simonson 1993) that the context of individual decision-making can have a distinctive impact. In issues of population policy this is more or less an unexplored possibility and the current paper offers the possibility of seeing whether this is indeed the case. We assume that the demographic context of a country will act as a reference point in deciding the threshold level of fertility, that is, the level at which it is necessary to start government involvement in persuading families to adjust their fertility. When fertility is high in the country of residence, experts might be inclined to suggest higher levels of intervention than those who live in countries with much lower fertility. The basic reason for this divergence among demographers is some form of attachment to the status quo: even when an expert wants the government to intervene, they will not diverge too much from the status quo. Our second hypothesis is that the fertility context works both ways: demographers living in high-fertility countries will adapt their preferences and prefer higher intervention thresholds than those living in countries with lower fertility. And the reverse also applies: demographers living in low-fertility countries will prefer a lower intervention threshold than those living in countries with higher fertility.

Finally, policy preferences may be affected by the values or political orientation of demographers. Most fertility or population policy analyses ignore the issue that such elements may be involved, whereas in principle and practice, choices in population will involve values and ethics (Van Dalen 2008; Atkinson 2014; Dasgupta and Dasgupta 2017). In particular, issues of government intervention revolve around how much value respondents attach to the issue of freedom of choice and whether they think that unfettered individual choices will be superior to collective decisions in matters of fertility. Our third hypothesis is that demographers who position themselves on the

political right will have a more neo-liberal, or in some cases libertarian worldview, will cherish freedom of choice in the broadest sense of the term, and will have a strong aversion to government intervention compared with those on the political left, who see government primarily as the best candidate for taking corrective actions whenever individual behaviour hurts collective interests.

Methods and data

To shed light on the factors affecting population policy preferences, we use a survey among the members of the International Union for the Scientific Study of Population (IUSSP) carried out in 2009. The total number of respondents consisted of 758 demographers from different corners of the world (see Van Dalen and Henkens 2012). The IUSSP, founded in 1928, is a worldwide organization of population scientists, and aims 'to promote the scientific study of population, encourage exchange between researchers around the globe, and stimulate interest in population issues'. The sample, based on the IUSSP directory, has the advantages of: (1) a worldwide coverage of demographers; and (2) members who are a mixed crowd of both academics and practitioners involved in setting up family planning programmes, organizing censuses, or keeping account of the state of the national population. The survey was internet-based, and the link was sent out via email through the IUSSP secretariat to all its members. To stimulate response, the survey was set up in the two languages used within the IUSSP: English and French; 86 per cent of respondents used the English version. The response rate (taking into account only the fully filled out questionnaires) was 35 per cent, well above response rates for similar expert surveys (cf. Klein and Stern 2005). The sample distribution is in line with the IUSSP's membership composition: 76 per cent of members are affiliated with a university or research institute, with the remainder dominated by demographers working for a government agency (12 per cent) or non-governmental organization (NGO) (8 per cent), with 4 per cent working in the private sector. The distribution of respondents in the sample by age, region, and sex is roughly in line with the composition of IUSSP members (see Van Dalen and Henkens 2012, p. 406).

Table 1 provides an overview of the independent and dependent variables and their definitions as used in this paper. The dependent variables are measured by two questions. First, respondents were

asked 'When fertility is below the replacement level, at what level of the fertility rate (TFR) do you think that a government should take measures in order to stimulate fertility?' Answer categories were: at a TFR of 1.8; 1.6; 1.4; 1.2; 1.0; 0.8 or lower; or never intervene. Second, respondents were asked 'When fertility is above the replacement level, at what level of the fertility rate (TFR) do you think that a government should take measures in order to reduce fertility?' Answer categories were: at a TFR of 2.5; 3.0; 3.5; 4.0; 4.5; 5.0 or higher; or never intervene. The dependent variables are presented at the top of Table 1 and show the means and standard deviations of the government intervention (dummy) variable and the stated threshold level of fertility intervention in each type of fertility regime. Although we did not explicate the type of TFR in the survey for reasons of brevity, readers should be aware of the fact that period and cohort fertility rates may diverge. Period TFRs are generally more volatile, as they are more affected by conditions in the year they are measured, for instance, transitory factors relating to the number of births to each cohort or the average age of childbearing. Cohort fertility serves more long-run purposes, but in actual practice, measuring cohort rates takes more time and in actual policy discussions, period TFRs or adjusted TFRs are used to deal with this problem (cf. Bongaarts and Feeney 1998; Schoen 2004; Sobotka 2004).

The key explanatory variables consist of political orientation (five-point Likert scale), and respondents' reports of whether they are concerned about the prospects of overpopulation or population decline. The key variables describing views with respect to population and development refer to the consequences of world population outstripping the earth's carrying capacity and whether population decline might decrease economic growth. Close to 50 per cent of the demographers disagree with the statement 'The current size of the world population exceeds the carrying capacity of the earth'. But a substantial share of the demographers (33 per cent) agree with the statement and the remainder take an agnostic position. With respect to population decline, only 17 per cent expect negative effects of population decline, 60 per cent disagree, and 23 per cent take a neutral position. The other key variable that we are interested in refers to the political orientation of population experts: 45 per cent are oriented towards the political left, 38 per cent take the middle position, and 17 per cent favour the political right. The other variables are used as control variables.

Table 1 Description of variables and descriptive statistics

Variables	Description	Mean	Standard deviation
<i>Dependent variables</i>			
Intervention in low-fertility regimes	When fertility is below the replacement level, at what level of the fertility rate (TFR) do you think a government should take measures in order to stimulate fertility? Never (= 0) or one of six TFR levels (= 1)	0.84	0.37
Intervention in high-fertility regimes	When fertility is above the replacement level, at what level of the fertility rate (TFR) level do you think a government should take measures in order to reduce fertility? Never (= 0) or one of six TFR levels (= 1)	0.89	0.32
TFR levels of intervention in low-fertility regimes	For those that prefer intervention, the threshold level is measured by the options (1.8; 1.6; 1.4; 1.2; 1.0; 0.8 or lower = 0.8)	1.44	0.32
TFR levels of intervention in high-fertility regimes	For those that prefer intervention, the threshold level is measured by the options (2.5; 3.0; 3.5; 4.0; 4.5; 5.0 or higher = 5.0)	3.29	0.78
<i>Explanatory variables</i>			
Net reproduction rate	Net reproduction rate in country of residence as reported for 2005–10 (UN 2017)	1.11	0.41
Political orientation	How would you place your views on a scale from left (= 1) to right (= 5)?	2.53	0.98
View on carrying capacity	Agreement with statement ‘The current size of the world population exceeds the carrying capacity of the earth’ (1 = fully disagree to 5 = fully agree)	2.80	1.30
View on population decline	Agreement with statement ‘Population decline will decrease the rate of economic growth’ (1 = fully disagree to 5 = fully agree)	2.40	1.04
Sex	Male (= 0), Female (= 1)	0.36	0.48
Age	Years	48.21	14.08
Language	Language used in questionnaire (English = 0; French = 1)	0.14	0.35
Work environment	Academic (university or research institute = 0), Policy-oriented (government agency, NGO, or private sector = 1)	0.20	0.40
Expert-level knowledge on fertility and family planning	Self-rated knowledge on fertility, reproductive health, and family planning (1 = low; 2 = medium; 3 = high)	2.38	0.67

Note: N = 758.

Source: Authors’ own worldwide survey of demographers in 2009.

To assess the impact of the fertility context of decision-making, we use a country-level variable: the net reproduction rate (NRR). This variable is based on a source outside the survey, namely the UN estimates for the time period 2005–10 (UN 2017). The NRR is deemed the most appropriate variable for capturing the context of decision-making in a parsimonious manner, as it incorporates information not only on fertility but also on women’s mortality. The estimation results do not change much when including both the TFR and women’s mortality in the country of residence, but in multilevel analysis we should be cautious in including too many country-level variables.

To control for other factors that might impinge on policy preferences, we control for age; sex; the question of whether respondents possess expert knowledge with respect to fertility, reproductive health, and family planning; the institution at which

respondents work, either academic (university or a research institute) or applied (government agency, NGO, or private sector organization); and finally whether demographers speak French or English (respondents could fill in a French or English language version of the survey; see Van Dalen and Henkens (2012) for details).

The analysis is carried out in two steps. First, we analyse by means of multilevel logit analysis the decision to support government intervention in matters of fertility in a country. And in a second step, for those who favour involvement, we examine by means of multilevel ordered logit analysis, at what threshold level they would start government intervention. Multilevel analysis is used because experts are nested within 93 countries, with an average of 8.2 experts per country. Preference for the ordered logit analysis of six ordered options instead of the simpler regression analysis is based

Table 2 Population policy preferences of demographers for intervention in high- and low-fertility regimes

	Fertility threshold level for intervention in low-fertility regime						Never intervene
	1.8	1.6	1.4	1.2	1.0	0.8 or lower	
Percentage distribution	26.0	14.2	16.9	10.6	10.7	5.6	16.0
Cumulative distribution	26.0	40.2	57.1	67.7	78.4	84.0	100.0
	Fertility threshold level for intervention in high-fertility regime						Never intervene
	2.5	3.0	3.5	4.0	4.5	5.0 or higher	
Percentage distribution	29.1	21.7	12.4	15.1	3.1	7.4	11.2
Cumulative distribution	29.1	50.8	63.2	78.3	81.4	88.8	100.0

Notes: Question posed for low-fertility regimes: ‘When fertility is below the replacement level, at what level of the fertility rate (TFR) do you think that a government should take measures in order to stimulate fertility?’ The cumulative percentages should be interpreted as follows: at TFR 1.8 (just below the replacement level of 2.1), 26 per cent of respondents think governments should intervene to increase the TFR; 40 per cent support intervention at TFR 1.6, etc.; and 84.0 per cent support intervention at TFR 0.8 or lower. Hence 16.0 per cent are in favour of non-intervention whatever the below-replacement TFR level is. The corresponding question for the high-fertility regime was: ‘When fertility is above the replacement level, at what level of the fertility rate (TFR) do you think that a government should take measures in order to reduce fertility?’

Source: As for Table 1.

on the fact that both intervention questions contain open-ended options (a threshold TFR of 0.8 or lower; and a threshold TFR of 5.0 or higher), which are difficult to assign a precise numerical value to, as well as different intervals (low-fertility regime intervals jump by 0.2 and high-fertility intervals by 0.5). With respect to the use of this two-step approach, we initially used Heckman’s two-step selection method (Heckman 1979) to test for selection problems, with assessed quality of long-run forecasts on fertility, mortality, and migration, as well as self-reported knowledge about fertility, mortality, and migration as the additional variables (also registered in the survey, see Van Dalen and Henkens 2012) in the selection equation. Clear signs of selection were not observed, hence we resorted to the use of the two-step approach presented here.

Results

Stated population policy preferences

Table 2 captures the prevailing views of experts on when government support is needed to stimulate fertility if fertility is deemed too low, and when to intervene (e.g. by offering access to contraception) if fertility is deemed too high.

An obvious norm for judging fertility developments in countries where low mortality is the rule is the fertility replacement level of 2.1, even though this norm is highly debated. Lutz (2014) has made the claim that replacement-level fertility is not a meaningful policy goal, as ‘it has little to do with

actually maintaining the size of a population in contemporary societies, which have irregular age structures and experience migration and mortality changes’ (p. 528). Lutz’s focus was very much directed at western countries, where low fertility is the rule, and he claimed that replacement level fertility can be significantly different from 2.1. In a way, Table 2 confirms this insight as the median respondent gives a threshold fertility level of 1.4 for intervention in low-fertility regimes. This figure comes close to what demographic research (Striessnig and Lutz 2013; Lee and Mason 2014) has shown to be ‘optimal’ fertility, based on models that explicitly take into account the economic effects of population growth and age structure.

The impression of a diverse group of professionals can also be deduced from the bottom half of Table 2, where the median respondent picks a threshold fertility level of 3.0 for intervention in high-fertility regimes. Note that, for less developed countries, the threshold value will probably be higher than the standard replacement level of 2.1 because mortality, and sometimes even the sex ratio at birth, may differ substantially from what is standard in developed countries. Espenshade et al. (2003) showed for the period 1995–2000 that the replacement fertility level in the least developed countries was around 2.7, and in countries with very low survival rates, such as Sierra Leone, this replacement level can approach 3.5. More recent estimates by Gietel-Basten and Scherbov (2019) show that replacement fertility levels have fallen across the world. However, the fact that quite a number of demographers give higher threshold levels suggests that

Table 3 Explanation of preference to intervene in fertility level and, for those who prefer to intervene, the TFR level threshold among demographers, worldwide

	Policies for low-fertility regimes				Policies for high-fertility regimes			
	Intervention (no = 0, yes = 1) (Model 1)		TFR level of intervention (Model 2)		Intervention (no = 0, yes = 1) (Model 3)		TFR level of intervention (Model 4)	
	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.
<i>Country-level variable</i>								
Net reproduction rate in country of residence	0.45	0.37	-0.16	0.21	0.88**	0.43	0.67***	0.27
<i>Individual perceptions and orientation</i>								
Carrying capacity of the world	0.05	0.09	-0.16***	0.06	0.68***	0.13	-0.28***	0.06
Negative consequences of population decline	-0.01	0.11	0.15**	0.07	-0.03	0.13	0.04	0.07
Political orientation	0.51***	0.13	0.05	0.08	0.30**	0.15	0.05	0.08
<i>Control variables</i>								
Sex (male = 0)	-0.06	0.23	-0.31*	0.16	-0.41	0.27	0.29*	0.16
Age (years)	-0.02*	0.01	-0.00	0.01	-0.00	0.01	-0.02***	0.01
Work environment (academic = 0)	-0.02	0.27	-0.34*	0.18	0.39	0.36	-0.11	0.18
French (English = 0)	0.21	0.37	0.61***	0.24	-0.27	0.37	0.33	0.27
Knowledge of fertility	-0.05	0.16	0.29***	0.11	0.12	0.19	0.20*	0.12
Constant	0.95	0.93	—	—	-0.18	1.08	—	—
<i>Random effects parameter:</i>								
Country	0.39	0.23	0.06	0.08	0.37	0.27	0.53	0.19
<i>N</i>	758		637		752		668	
Log-likelihood	-305.8		-1,054.0		-223.8		-1,015.7	

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Notes: Models 1 and 3 are estimated by means of multilevel logit analysis; Models 2 and 4 are estimated by means of multilevel ordered logit analysis; estimated cut-off points are not shown in the table. Coef. refers to the coefficient and s.e. is the standard error.

Source: As for Table 1.

other factors are at play in explaining their population policy preferences.

A final observation on Table 2 is that a minority of demographers abstain from government intervention in both fertility regimes: 16.0 per cent of the demographers prefer governments never to intervene in the case of high-fertility regimes and 11.2 per cent in the case of low-fertility regimes. These demographers may be concerned, for example, that in practice, tacit elements of coercion may still be present, despite the general consensus that family planning should be voluntary. Most demographers interviewed display a high degree of consensus with respect to the issue that government should in principle intervene at a certain point. Of course, the type of government intervention may vary from providing information to access to health services or financial incentives. These differences are not explored.

Understanding population policy preferences

The multivariate analyses of the choices—whether and when to support government intervention—are presented in Table 3.

Intervention or non-intervention? The results show that demographers living in countries with a high NRR are far more likely to support government intervention in high-fertility regimes than demographers living in a country with a low NRR (Model 3). When considering the support for government intervention in low fertility regimes (Model 1), this demographic context effect is not significant.

Second, we estimate the impact of demographers' judgements about the consequences of population growth and decline. In the low-fertility regime, these judgements do not have an impact on the preference for intervention (Model 1). However, in the high fertility regime judgements clearly have an impact on the principal issue of government intervention: the more demographers agree that the world population level exceeds the carrying capacity of the earth, the more they are willing to let government interfere in the case of high fertility (Model 3). Issues of population decline are of no significance, as expected.

And third, political orientation matters when it comes to the choice of whether government should intervene or not in changing a country's fertility (Models 1 and 3). In the case of a low-fertility

regime, the political orientation of experts is the only factor of significance. Contrary to the expectation that experts who position themselves on the political right would be in favour of non-intervention of government and pro freedom of choice, this does not seem to apply to demographic issues: demographers on the political right are more in favour of intervention than demographers on the left of the political spectrum. This effect also applies for demographers deciding on this issue for a high-fertility regime; however, the impact of political orientation in a high-fertility regime is smaller than in the low-fertility regime.

At which fertility level should government intervene? Models 2 and 4 present the results for explaining the threshold fertility level (for high- and low-fertility regimes) at which government intervention is deemed appropriate. Three observations merit discussion.

First, the policy preferences of demographers for the two fertility regimes are affected in an asymmetric manner and this is to some extent affected by the demographic context of the country in which the respondent resides. The context matters quite a lot for high-fertility regimes whereas it does not matter for low-fertility regimes. To restrict our attention to high-fertility regimes (Model 4): the higher the NRR in the country of residence, the higher the threshold level of fertility at which government intervention is seen by demographers as necessary step. This is an important finding, because it underscores that judgements are influenced by the circumstances in which people live. These judgements may be made for a myriad of reasons. For demographers living in high-fertility countries, one reason could be that they believe their threshold to be feasible and that striving for a lower threshold might be overambitious in the short run. Furthermore, in a high-fertility environment, government initiatives to lower fertility

could be viewed by respondents as restricting freedom of choice. In contrast, in a low-fertility environment, government intervention would mean encouraging childbearing. To shift the level of intervention upwards, governments would allow or facilitate more freedom of choice, which is generally perceived as a positive move.

The second effect concerns the impact of the perceived consequences of population growth or decline and this effect also shows some differences across the two regimes. Demographers with concerns about overpopulation and the carrying capacity of the earth choose a lower TFR at which governments should intervene than those who are not concerned. In other words, these concerned demographers may see the upside of trends towards low fertility, as alleviating the pressure on issues of global overpopulation. And clearly those who are concerned about the issue of overpopulation when they cast their eye on high-fertility regimes certainly prefer government intervention at a lower TFR. What differentiates the two fertility regimes is that the concerns about overpopulation in a low-fertility regime are more or less neutralized if the demographer is also concerned about population decline harming economic growth. And, of course, concerns about the adverse economic consequences of population decline do not matter at all when the demographer assesses the situation in a high-fertility regime.

To see the effects of concerns about global population growth and the demographic context more clearly, in Table 4 we offer a simulation of the predicted probabilities of each choice outcome for the case of high-fertility regimes.

The concerns of demographers that global population growth exceeds the carrying capacity of the earth have a major impact on the threshold level when it comes to high-fertility regimes. For instance, if we compare demographers with low concern about these issues with those who are very concerned, we

Table 4 Predicted probabilities of threshold fertility intervention levels for high-fertility regimes

	Distribution of threshold levels TFR						Total
	2.5	3.0	3.5	4.0	4.5	5.0 or higher	
Sample average ¹	0.32	0.25	0.14	0.18	0.03	0.08	1.00
Concerns about carrying capacity of the earth							
Low	0.15	0.22	0.18	0.27	0.05	0.12	1.00
High	0.34	0.29	0.15	0.15	0.02	0.04	1.00
Net reproduction rate in country of residence							
0.8	0.27	0.28	0.17	0.19	0.03	0.06	1.00
1.5	0.18	0.24	0.18	0.25	0.05	0.10	1.00

¹These are the sample probabilities underlying the model in column (4) of Table 3.

Source: As for Table 1.

can clearly see how this impacts their population policy preferences: 63 per cent of the 'concerned' demographers give a threshold level of 3.0 children per woman or lower, whereas this preference for the threshold level of 3.0 children is only shared by 37 per cent of the 'unconcerned' demographers. The distribution is less skewed but still pronounced for the context of decision-making: the NRR level where the demographer lives. For those living in a below-replacement country ($\text{NRR} = 0.8$), 55 per cent give a threshold level of 3.0 children or lower. In an above-replacement country ($\text{NRR} = 1.5$) only 42 per cent support a threshold of 3.0 children or lower.

A third observation to be made from Table 3 is that political orientation does not matter significantly when respondents are asked to focus on the threshold level at which government intervention is supported, either in a high- or a low-fertility regime. Apparently, demographers see this as an issue where scientific knowledge of the situation at hand matters rather than political orientation. And perhaps that is why demographers with a high level of knowledge about family planning or reproductive health also give slightly higher fertility thresholds for government intervention in low-fertility regimes than demographers who do not consider themselves fertility experts (Model 2). In other words, family planning experts are (slightly) more concerned about the TFR dropping too much in low-fertility societies (Lutz et al. 2006).

The institution at which a demographer works does not seem to matter much: whether they work in an academic surrounding or an applied environment, such as a government agency or NGO, is irrelevant for high-fertility regimes. Only in the case of a low-fertility regime (Model 2) can we see a weak sign that demographers working in a policy setting are in favour of lower thresholds than those in an academic setting.

A final observation is that the French-speaking respondents are more set on intervening at higher TFR levels in the low-fertility regime than the English-speaking respondents (Model 2). This difference should not be exclusively attributed to those living in France, but also to French-speaking demographers living in Africa, Canada, and other parts of the world.

Conclusion and discussion

Government involvement in matters of fertility has been, and still is in some countries, a controversial

issue, whether considering low-fertility regions, such as Europe (cf. Teitelbaum and Winter (1998), or high-fertility regions, as illustrated by Robinson (2015) and May (2017) for the case of sub-Saharan Africa. Nonetheless, given the importance of the societal consequences of population decline or excessive (global) population growth, population policy is like the proverbial 'elephant in the room'. Understanding how judgements and decisions at the national or the supranational level are made is therefore important for understanding dilemmas in population policy. And in this vein, the current paper offers food for thought, as it draws on the international background of population experts who ponder the dilemmas of population growth and decline and who are asked to think about whether governments should intervene in matters of fertility. By showing their attitudes and population policy preferences, we can gain insights that are not so easily obtained from other sources. Four important elements stand out.

First of all, the demographers display in their policy preferences a wide interval of non-intervention by the government in matters of fertility. The median demographer in the survey would consider fertility levels between 1.4 and 3.0 as an interval in which they would not support government intervention. It suggests that professionals do not immediately 'cry wolf' when total fertility drops below the bar of 2.1.

Second, an important driver for this policy stance among demographers is their assessment of (or concerns about) the pros and cons of population growth or decline. In high-fertility regimes especially, the concern about the carrying capacity of the earth matters considerably in intervening in private choices on fertility: concerned demographers support action at lower thresholds than experts without this sense of concern. In low-fertility countries the situation is different: concerns about global overpopulation are kept in check by concerns over the economic consequences of population decline. In other words, population decline is a mixed blessing: it perhaps alleviates the concerns of overpopulation, but it may hamper economic growth.

Third this paper provides evidence that demographic context matters considerably in deciding on population policies, but only for high-fertility regimes. However, we found both an expected and an unexpected effect. The expected effect is that demographers are more in favour of government involvement in high-fertility countries, the higher the NRR in their place of residence. However, a notable finding is that demographers who reside in

countries with a high NRR also have higher threshold levels before they would suggest governments intervene compared with demographers living in countries with a low NRR.

Fourth, this paper clearly shows that the political orientation of demographers is important in deciding on the principal issue of whether governments should intervene in matters of fertility at all. Demographers who place themselves on the right of the political spectrum are more set on intervention in matters of fertility than left-wing experts. And this applies to a larger extent for low-fertility than high-fertility settings. This finding contrasts with what we would expect based on the fact that people on the political right cherish freedom of choice, whereas we would expect those at the other end of the spectrum to have no qualms about supporting collective action. This may be in large part because the political right may cover different types of people, varying from progressive right to conservative right. The latter may be more inclined to support government intervention in increasing fertility in low-fertility settings. Of course, we can also see this divide between left and right as reflecting a dichotomy in historical population debates between optimists and pessimists about ‘the force of reason’ (Sen 1997). Those belonging to the political left and progressive right (the optimists) would trust individuals and families to act responsibly, whereas the conservative right would be pessimistic about the force of reason and would favour intervention by the state in matters of fertility.

Discussion

This paper brings to the fore dilemmas that are in store for governments around the world, as in the long run many countries will probably face population decline (Reher 2007; Lutz et al. 2018) and, at the same time, the issue of global climate change will increasingly demand the attention of governments and citizens. Governments in low-fertility countries will probably struggle with the dilemma of national vs. global interests, and traces of this struggle are reflected in the choices made by demographers in the survey on the threshold levels of intervention for low-fertility settings. Acting to increase fertility may be perceived by governments as furthering the national interest, whereas the global interest would imply efforts to maintain the status quo of low fertility and certainly not to increase fertility. The global interest is, of course, the most difficult to secure. Sandler (2004) has shown that these types of dilemmas are extremely

difficult to solve in practice, as governments are tempted to cater to the needs of their constituents and hence prefer to put the interests of their nation first.

This brings us to the second element that might prove challenging. Citizens, also, will probably display the stance that we earlier discovered among the Dutch population (Van Dalen and Henkens 2011): the large majority of the population wants the global population to decrease, but their own group—the national population—to remain stable. In other words, people’s population preferences will probably display the ‘not-in-my-backyard’ attitude that is common in quite a number of ‘public good’ issues. Furthermore, judgements made in demography are not neutral, as is the case in other disciplines (Van Dalen 2019). Demographers on the political right are more persuaded than demographers on the left to intervene in matters of fertility. A right-wing orientation does not apparently signify, as might be expected, a clear preference for freedom. It is hard to determine what drives these results. Being right-wing oriented could signify conservative tendencies (perhaps also affected by prevailing religions in a country), but it could also mean that left-oriented demographers have become more oriented towards individual freedom of choice, as can be seen in the *Programme of Action* adopted at the ICPD in Cairo (UNFPA 1994), where sexual equality and the reproductive rights of women and girls were seen as being central to issues of population and development. It should, however, be noted that the impact of political orientation only applies when asking the principal question, about government intervention. Once demographers are asked to reflect on the question of *when* government should intervene, the political orientation effect is weak or absent, and this suggests that demographers perceive this decision as one outside the realms of politics.

This analysis is not without limitations. First of all, we did not specify the nature of government intervention in matters of fertility. The tacit assumption is that governments would resort to voluntary measures, as specified by the ICPD of 1994. Future research might shed some light on the credibility of specific government actions aimed at reducing or increasing fertility levels. For instance, Engelman (2011) has claimed that providing access to contraceptives to address the unmet needs of women around the world will be sufficient to end all unintended pregnancies. But, as pointed out by Lutz (2014), offering contraceptives can only work when women become empowered through education to influence their husbands or are educated to

withstand fears that contraception has adverse effects on health. Educating women is in his view an essential part of population policies. And authors who focus on reproductive justice may also take issue with the idealized or textbook images prevalent in family planning provision. The reproductive movement emphasizes that there are ‘intersecting factors’ (Bose 2012; Sigle 2016), such as race, sex, and class, that impact marginalized groups of women. To take the policy example of Engelman, not every woman has full access to the information and facilities offered by family planning organizations, because of these intersecting factors.

A second limitation is that the data in this paper were collected in 2009. The demographic reality has changed since then, and this simple fact could potentially affect the views of demographers on fertility. For example, concerns about climate change may have become more prominent since that time, although we tend to forget that even at the time of data collection, climate change was at the forefront of public debate: former US vice president Al Gore released *An Inconvenient Truth* (Gore 2006), the Nobel Peace Prize 2007 was awarded jointly to Gore and the Intergovernmental Panel on Climate Change (IPCC) for their efforts to generate awareness about climate change, and the *Stern Review* (Stern and Stern 2007) also made an impact in policy circles.

This paper offers a view of how demographers judge the demographic problems of societies—developed and less developed—and how these views could translate into policy advice. So far, demographers have made an effort to register the *private* fertility preferences of citizens (Goldstein et al. 2003; Hagewen and Morgan 2005; Lutz et al. 2006); the current study tries to reveal what the *public* fertility preferences of societies are, as perceived by demographers. By analysing the policy preferences of demographers as a group, we profit from the diversity of nationalities and experiences. And this type of research contributes to key questions in political demography as perceived by Weiner (1971). He stated back in the 1970s that ‘it is not enough to know the facts and figures of population—that is fertility, mortality and migration rates; it is also necessary to consider the knowledge and attitudes that people and their governments have toward population issues’. Teitelbaum (2015) re-emphasized recently that this field is seriously under-researched by demographers. The current paper underscores the importance of this strand of demography, as it shows that population policy preferences are informed by economic or social judgements on the

consequences of population growth and decline, as well by as the national context.

Notes and acknowledgements

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